

panion in 1878, also measured two small neighbouring stars which he estimated of "about the 13th mag." with these results—

(a) 1878.842 ... Position 49°59' ... Distance 87"209  
(b) 1878.842 ... " 197'85 ... " 71'384

Secchi, in *Memorie dell' Osservatorio del Collegio Romano*, 1859, p. 119, publishes measures of "70  $\rho$  Ofiucæ presso colla più vicina," thus :—

1856.627 ... 215°08' ... 87"574 (4) ... 11m.  
1856.627 ... 67'2 ... (4) ... 12m.

The proper motion of 70 Ophiuchi by comparison of Bradley with the Greenwich catalogue of 1872, appears to be +0".2014 in right ascension, and -1".1170 in declination, and transferring with the aid of these values Hall's angles and distances to Secchi's epoch, we find :—

(a) ... 1856.627 ... 190°63' ... 94"38  
(b) ... 1856.627 ... 65°89' ... 77'65

It can hardly be doubted that Secchi's stars are identical with Hall's, but the difference in both position and distance of the star (a) seems to merit further examination; if there be no error in Secchi's measures proper motion of the thirteenth magnitude, as Hall estimated it, is probable.

Smyth refers somewhat vaguely to two small companions of 70 Ophiuchi; at his first date the Washington measures carried back as above would give :—

(a) ... 1830°76' ... 87°9' ... 76"1  
(b) ... 1830°76' ... 185°7' ... 122'3

THE GREAT COMET OF 1874.—Mr. T. W. Backhouse writes from Sunderland, pointing out that the tail of this comet attained a much greater length than was assigned in this column, p. 483. The length there mentioned 23°, was that given by observation in the suburbs of London on July 13, when the head of the comet was about to descend below the horizon. On the same evening Mr. Backhouse found the tail 26° long, and 35° on the 14th, and he refers to greater lengths subsequently noted. These, however, refer to dates when the head was no longer visible in these latitudes. Prof. Julius Schmidt gave the following estimations made at Athens :—

July 16 ... 47°2' | July 18 ... 55°9' | July 21 ... 65°8'  
17 ... 54°0' | 20 ... 63°3' | 22 ... 64°6'

These, with other observations, will be found in his description of the appearance of the comet, in No. 2067 of the *Astronomische Nachrichten*.

### BIOLOGICAL NOTES

COLOSSAL CUTTLE-FISH.—Mr. T. W. Kirk adds to our rapidly-increasing knowledge of large cuttle-fish in an important paper lately published (*Trans. New Zealand Institut.* vol. xiv). One species referred by him to Steenstrup's genus *Architeuthis*, and called *A. verilli*, was found stranded at Island Bay, Cook's Strait, New Zealand, in June, 1880. When first found on the beach, it was not quite dead; the longer arms measured twenty-five feet; the blades had a row of fifteen suckers along each side and a middle row of nineteen. The smaller arms were about eleven feet nine inches, with a width of seven and a half inches. They were furnished with suckers and fleshy tubercles, but these shorter arms were of unequal length. The fleshy membrane connecting these was about eleven inches deep. The head was four feet three inches in circumference, the eyes five inches by four; the body was seven feet six inches in length, and nine feet two inches in its greatest circumference. While this large cuttle differs in some respects from the type of Steenstrup's genus, Mr. Kirk prefers to wait for fresh material ere creating a new genus. Another large cuttle is referred to a new genus, *Steenstrupia*, but its long pair of arms had been torn off at a length of six feet two inches, when it was found in Cook's Strait; its body was long (nine feet two inches), almost cylindrical, but very slightly swollen in the middle, head long (one foot eleven inches), narrow sides, nearly straight, eyes larger, and with lids, sessile arms, all same length and size (four feet three inches), suckers, thirty-six on each arm, in two equal rows, each with a bony ring armed with from forty to sixty sharp incurved teeth. The fin was rhomboidal, posterior lateral. The

internal shell was six feet three inches long. The new species is called *S. stockii*.

JAPANESE COTTON.—The Japanese Government have lately presented to the National Museum of the United States an interesting collection of cotton grown in Japan, accompanying the donation with notes on the specimens, from which we extract the following :—Cotton is produced along the coasts of the districts Kinai, Kanto, Chiugoku, and Kiushiu, where the soil is sandy and the climate warm. In some of the north-eastern parts, where there are early frosts, the attempt to cultivate cotton is rarely made. It is uncertain when the cultivation of cotton in the Japanese empire first commenced, but it would appear that the method of culture adopted in the western provinces came from Kinai, though the seeds grown in the eastern provinces came from Mikawa. In the province of Settsu the crop is the largest, indeed is not surpassed by that of all the other provinces, but the cost of cultivation is high. The staple, moreover, is rather short and hard, so as not to be suitable for very fine yarns. In recent years, however, cotton yarns are imported on a large scale, and fine yarns are easily procured; so the home-produced cotton is profitable in proportion to its yield. This will account for the fact that the cultivation of the long and soft staple is quickly passing away, and that it is becoming the almost universal custom to grow only that seed which will produce a maximum yield. While cotton plants have different names in the different provinces, it is believed that there are but three sorts—the Kanto, which produces a long, soft, and strong staple of glossy appearance, from half to two-thirds of an inch in length, the Kinai, with a hard and short staple, from a quarter to half an inch in length, and rather destitute of glossiness, and the Ainoko, which is a hybrid between the two former. The cultivation of the cotton-plant in Japan is not uniform, varying immensely according to not only the climates and soils, but also according to the customs of each district, but it is to be expected that with the advance of time the mode of culture may become more uniform, and that excellence in quality may even take the place of a maximum in quantity.

AMERICAN WOODCOCK CARRYING ITS YOUNG.—Whilst it is still somewhat uncertain whether the woodcock (*Scolopax rusticola*, Linn.) of Europe carries its young in its claws or between its legs, we believe this habit has, though referred to by Audubon, not been recently observed in the American woodcock (*Phiochelia minor*). It is, therefore, interesting to note the following observations of Mr. F. L. Harvey, of Arkansas. In April last (1882) a woodcock was flushed from a clump of persimmon trees on the border of a slash. Knowing the bird's habit of rising above a clump of bushes and then suddenly dropping behind it out of range, Mr. Harvey fired as soon as it rose. When the smoke cleared away the bird was seen rising with a laboured flight, and concluding it was wounded its fall was expected, but instead it turned and came nearer. It was seen to be holding something between its feet, which on closer observation proved to be a young chicken recently hatched, which was located between the mother's legs, and supported by her feet placed on its sides. So slow was the flight that by a brisk trot the observer was able to gain on the bird, which he tried to fire out so as to compel it to drop its burden, but in this he was not successful. It would appear that this bird and Wilson's snipe often remain in Arkansas to breed (*American Naturalist*, September).

BLIND SUBTERRANEAN CRUSTACEA IN NEW ZEALAND.—The existence of blind Edriophthalmatous Crustacea in wells and subterranean cave rivers in Europe has been long known, and now Mr. C. Chilton describes some quite new forms found in New Zealand (*Trans. New Zealand Institute*, vol. xiv.). They were obtained from a well at Eyreton, about six miles from Kaiapoi, North Canterbury; the well had been excavated about seventeen years previously, was not more than twenty-five feet deep, and was fitted with a common suction-pump through the medium of which these new forms were obtained. These proved to be three species of Amphipoda and one of Isopoda. In none were there to be found in either the living or recent specimens the least trace of eyes. The Isopod is referred to a new genus *Cruregens*, and is most remarkable from the fact that it has only six pairs of appendages to the seven thoracic segments, whilst the normal number should be seven. In many Isopods the young have at first only six pairs of legs, the last thoracic segment being but slightly developed and destitute of appendages (Fritz Müller, "Facts and Arguments for Darwin"), and

hence at first sight it might appear that the new form was but an immature state. Mr. Chilton, however, states that he has examined altogether twenty live specimens, none of which seemed otherwise to have anything immature about them, and these were obtained at various times from January to October, 1881, he would, therefore, refer the absence of the seventh pair of appendages to an arrest of development. In some respects the new genus resembles *Paranthura* of Spence Bate. The new species is called *C. fontanus*. The Amphipods found with this Isopod are *Cragonyx compactus*, sp. nov., *Calliope subterranea*, sp. nov., and *Gammarus fragilis*, sp. nov., all without eyes. The new species are all figured, and at great length described.

### GEOGRAPHICAL NOTES

MR. STANLEY has returned to Europe, after an absence of between three and four years, during most of which time he has been on the Lower Congo. From the station which he established at Vivi, below the Yellala Falls, his object was to make a road past the long line of cataracts, about 150 miles, to Stanley Pool. Much of the road has, we understand, been constructed, and five stations have been established. Mr. Stanley himself has been 300 miles into the interior, with what results to science remains to be seen. Meantime the French are diligently exploring the region lying between the Lower Congo and the Ogové, and have already done much to clear up its hydrography.

BARON NORDENSKJÖLD has under consideration an expedition to the Arctic next summer, and is engaged, in company with Mr. William Schönlanck, of Berlin, a gentleman much interested in geographical discovery, who is at present visiting Stockholm, as to the detailed arrangements of the same.

THE Swedish Geological Expedition returned from Spitzbergen to Tromsö on the yacht *Bojna* on the 16th inst. It was found impossible to land at Beeren Island, as intended, owing to tremendous seas.

WE regret to hear of the death of Mr. Krarup Smith, who has, since 1867, been Inspector of the Northern Districts in Danish Greenland. During the past winter he suffered from constant sleeplessness, and he expired somewhat suddenly on May 28, aged forty-nine. Every traveller who has passed any time at Godhavn during the last fifteen years has spoken of the kindness and attention of Mr. Smith and his wife. He rendered important services to various Arctic expeditions, and freely placed his house and resources at the disposal of scientific workers—Nares, Markham, Hayes, Pavy, Whympier, Nordenskjöld, Steenstrup, and many others of various nationalities have experienced their hospitality or received their assistance. Although Inspector Smith was not of a robust constitution, he travelled extensively by boat and sledge in summer and winter throughout the Inspectorate, which extends over more than five degrees of latitude, and took much interest in the welfare of the natives, who sustain a real loss by his lamented death.

THE range of the changes of level in the rivers of Russia in Europe has become, since 1876, the subject of accurate measurements, and M. Tillo has just published in the Russian Nautical Review (*Morskoy Sbornik*) an interesting paper on this subject, being the result of measurements made at eighty different places. The highest range is reached by the Oka at Kaluga, the difference between the highest and lowest levels being as much as 45 feet; the average range for the same river from its source to its mouth being 32.2 feet; the average for the Volga from its source to its mouth is 33.6 feet, 30.1 feet for the Kama, 25.2 for the Duna, and 23.1 for the Don. For all other rivers the range is less than 20 feet. Of course this range diminishes very much towards the mouth of each river; but still it reaches 12 feet for the Volga at Astrakhan, and 9 feet for the Duna at Riga. The highest range observed in the lakes of Northern Russia was only 2.1 feet. A map prepared by M. Tillo shows the distribution of hydro-metrical stations on Russian rivers, their numbers having been increased in 1880 to 341 stations.

WE regret to learn that the *Neptune*, which was chartered by the American Government to take supplies to the Greely Scientific Expedition, in Lady Franklin Bay, in 81° N., has returned to St. John's, Newfoundland, and reports being unable to get further north than 79° 20', owing to an impenetrable barrier of ice. She, however, landed supplies at several ports. From the precautions which have been taken there is, we believe, no

danger of the U.S. Polar observing party being in straits for want of food. The fact of the *Neptune* being unable to get north, combined with the news of the early imprisonment of Lieut. Hucgaard's expedition on the coast of Novaya Zemlya, seems to indicate an exceptionally early and severe Arctic winter.

IN the last number (fasc. 3 tome 7) of the *Bulletin* of the Antwerp Geographical Society will be found an interesting discussion on the subject of geographical orthography, and the preparation of maps generally. The president took objection to the distinction made by the Commission to consider the subject between scientific maps and maps for common use. He recognised, he said, only one kind of maps, and that was *good maps*, which indeed might be made to bring into prominence certain features for special purposes. All maps should be constructed on rigidly scientific principles, most of all those for common and school use.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE

AT King's College, London, Prof. W. Grylls Adams, F.R.S., will deliver a course of lectures on Electricity during the ensuing session. A course of practical work in electrical testing and measurement with especial reference to electrical engineering will also be carried on under his direction in the Wheatstone Laboratory. The lectures will be given once a week on Thursday, at 2 p.m., and the laboratory will be open daily (Saturday excepted) from 1 to 4.

AT Owens College Prof. Arthur Schuster, assisted by Mr. W. Haldane Gee, will give a theoretical and practical course on the modern applications of electricity one evening a week during next winter. Beginning with the ordinary electrical measurements it is intended to include the usual tests of terrestrial and submarine telegraphy, the construction of telephones, electro-dynamo machines, and all measurements connected with electric lighting.

THE Calendar of Yorkshire College for the ninth Session has just been issued. In addition to the usual information, we note that Prof. Rucker, who has secured a new assistant-lecturer in the person of Mr. C. Spurge, B.A., of Cambridge, proposes some additional work in his Senior Mathematical Class, and, what is of more importance, to add a Third Year Course in the department of Physics. The lectures and laboratories in the Chemical, Geological, and Biological departments, under Professors Thorpe, Green, and Miall respectively, as well as the classes generally, are to be continued as in last session. In the Textile Industries Department Mr. Beaumont has added a third year's course for such of his students as require it. In the Coal-Mining Department the recent alterations in the curriculum will come into full operation at the beginning of this next session. The course is in future to occupy two years, and will include lectures by the Professors of Chemistry and Geology, as well as instruction in practical coal-mining by Mr. A. Lupton. A boon to science teachers has been granted in the shape of Assisted Studentships, under which a teacher may work in the college laboratories on payment of one-fourth of the fees, Government paying the other three-fourths. We may add that the Yorkshire College has, at the present time, about 700*l.* a year to distribute in scholarships.

THE Marquess of Ripon, Viceroy of India, in a letter expressing his warm approval of the decision of the Council of the Yorkshire College, Leeds, to raise a memorial to the first president, the late Lord Cavendish, in the form of a Professorship of experimental physics, announces his intention of subscribing 500*l.* to the fund, which now amounts to 3000*l.*

FROM the Calendar of University College, Nottingham, we see that the teaching staff is well filled up, nearly all branches of a really liberal education being represented. From the interesting statistics given, it is evident that the institution is very largely taken advantage of. The Calendar gives an account of the origin of the College.

THE Winter Session of 1882-83 of the London School of Medicine for Women (30, Henrietta Street, Brunswick Square) will open Monday, October 2. Courses of lectures will be given at the school on Anatomy, Chemistry, Physiology, Practice of Medicine, and Practice of Surgery. A course of Practical Anatomy, with demonstrations, will also be held. Lectures on